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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

GANDHI, ANKIT P

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/539,166	Applicant(s) LEE ET AL.	
	Examiner ANKIT P. GANDHI	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

- a. Regarding claim 15-16, a recording medium with a built-in program is non-statutory because the program is not being executed by a processor or a computer.

Therefore the claimed subject matter fails to carry out any useful process.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Bohnke et. al., Patent No.: US 6,546,997.

Regarding claims 1, 10, and 13-16, Bohnke discloses a downlink signal constitution method, which is for a downlink of a cellular system using an orthogonal frequency division multiplexing access method, the downlink signal constitution method comprising:

(a) coding, interleaving, and symbol-mapping data of a common channel and a control channel, and assigning fundamental pilot symbols, necessary for a demodulation of the common channel and the control channel, to time, frequency, and antenna (b) receiving data to be transmitted through a traffic channel of each to user, and determining a transmission mode of each user according to the user's moving speed, channel information, and traffic requirement (c) determining additional pilot symbols, additionally necessary for a demodulation of the traffic channel, according to the transmission mode and moving speed by users; and (d) coding, interleaving, and symbol-mapping the data of the traffic channel according to the transmission mode by users, and assigning the mapped symbols and the additional pilot symbols according to time, frequency, and antenna **(figure 10, and column 8, wherein line 1-25, and lines 26-50 comprises an antenna 15 receives transmitted signals, which are down converted in a RF-down conversion means 16. Then, the down converted signals are digitized in a A/D-converter 17. The thus converted signals are transformed in a discrete/fast Fourier transformation means 19 into the frequency range, whereby the discrete/fast Fourier transformation means 19 is time and frequency synchronized by a time synchronization means 18a and a frequency synchronization means 18b. The frequency domain signals output by the discrete/fast Fourier transformation means 19 of the above-mentioned sub carriers being modulated with data signals, signaling signals, pilot signals etc. Are demodulated in a demodulation means 20a. Estimation means 20b receives the pilot symbols within the resulting data stream. Thereby, the estimation means 20b of the receiving apparatus is set corresponding to the switch means 9b and the pilot symbol generation means 9c of the corresponding transmission apparatus. In other words, in the**

transmission system of the present invention, the transmission apparatus and the receiving apparatus work on the basis of respectively known pilot symbols and of a respectively known pilot symbol modulation rate of the sub carriers in each GSM -frequency channel. If, for example, the transmission apparatus is implemented in a mobile station and the receiving apparatus is implemented in a base station of a wireless telecommunication system, the mobile station and the base station respectively know the pilot symbols and know, which respective subcarriers are carrying pilot symbols. The estimation means 20b of the receiving apparatus compares the received pilot symbols to the known pilot symbols (herein referred as, additional pilot symbols), e.g. stored in a memory, and performs an estimation of a channel transfer function, e.g. the channel attenuation, based on the known pilot symbol and further performs a time and/or frequency interpolation to generate an estimated channel transfer function. By means of the estimated channel transfer function, equalization means 20c equalizes the transmitted data symbols. Thereby, a reliable and correct equalization of the transmitted data can be achieved, as will be explained in more detail relating to FIGS. 16 and 17. The equalized signals are de-interleaved in a de-interleaving means 21. The de-interleaved signals are then channel decoded in a channel decoding means 22. The channel decoded data 23 can then be further processed as required. The time synchronization means 18a, the frequency synchronization means 18b, discrete Fourier transformation means 19, the demodulation means 20a, the estimation means 20b, the equalization means 20c, and the de-interleaving means 21 are provided with the necessary clock signals by a clock generating means 52, *and also further explained in column 11, lines 54-68, and column 12, lines 1-20, wherein high data rate uses a receiving*

OFDM/TDMA timeslot 31..., whereas figure 14A-B discloses allocation of the pilot symbols as shown, as well further explained in figure 17, column 15, lines 19-40, and further can be read on claim 3, and 7, and further illustrated in column 14, lines 55-67, and column 15, lines 1-17)

Regarding claim 2, 3, and 11 Bohnke discloses the downlink signal constitution method as claimed in claim 1, wherein the assignment of pilot symbols for the sub-carriers used by a first user group is different from the assignment of pilot symbols for the sub-carriers used by a second user group (figure 17, column 15, lines 19-40, wherein more pilot symbols are allocated to the subcarriers in each GSM frequency channel, therefore it is obvious to one skilled in the art that such system inherently comprises different group of pilot symbols).

Regarding claim 4, Bohnke discloses the downlink signal constitution method as claimed in claim 3, wherein the first user group is a higher-speed user group than the second user group, and some of all the sub-carriers is previously allocated for the first user group (column 4, lines 7-39)

Regarding claims 5 and 12, Bohnke discloses the downlink signal constitution method as claimed in claim 1, wherein the step (c) of determining additional pilot symbols includes: using no additional pilot symbol, when the transmission mode of the traffic channel is using only a basic antenna with the moving speed of a mobile station being less than a reference value; and using pilot symbols for additional antenna, when the transmission mode of the traffic channel is using an additional antenna with the moving speed of the mobile station being less than the reference value (claim 5 teaches the same limitation as disclosed above in claim 1, therefore respectively rejected under the same basis).

Regarding claims 6 and 7, Bohnke discloses the downlink signal constitution method as claimed in claim 1, wherein the step (c) of determining additional pilot symbols includes: additionally inserting pilot symbols for basic antenna in consideration of the moving speed of a mobile station, when the transmission mode of the traffic channel is using only a basic antenna with the moving speed of the mobile station exceeding a reference value; and additionally inserting pilot symbols for basic and additional antennas in consideration of the moving speed of the mobile station, when the transmission mode of the traffic channel is using an additional antenna with the moving speed of the mobile station exceeding the reference value (column 6, lines 36-60, and figure 10, column 8, wherein line 1-25, and lines 26-50)

Regarding claim 8, Bohnke discloses the downlink signal constitution method as claimed in claim 1, wherein the step (d) of assigning additional pilot symbols includes generating symbols according to a maximum number of traffic channel symbols, and then puncturing at positions for transmitting the additional pilot symbols (it teaches the same limitation as disclosed above, therefore respectively rejected under the same basis).

Regarding claim 9, Bohnke discloses the downlink signal constitution method as claimed in claim 1, wherein the step (d) of assigning additional pilot symbols includes generating traffic channel symbols previously in consideration of a portion of the number of the additional pilot symbols, and then puncturing at positions for transmitting the rest of the additional pilot symbols (as shown in figure 16, and column 14, lines 55-67, and column 15, lines 1-17)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANKIT P. GANDHI whose telephone number is (571)270-3009. The examiner can normally be reached on Monday-Friday - 9:00 to 5:00 (Altern: Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ricky Ngo/
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2616

/A. P. G./
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